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Farmland Values: Where's the Bottom?

Export Nations, Export States
pages 10 & 11

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PERSPECTIVES

THE FIRST SUPPLY-DEMAND FORECASTS FOR THE 1986/87 SEASON are in, and they present a grimly familiar picture: increased world production and large supplies. In these early-May estimates, analysts outline the prospects for major crops. Remember, the forecasts are still very tentative.

The world wheat situation in 1986/87 is expected to resemble that of the past 4 years: Production will outpace consumption, leaving ending stocks at a new high. World production is forecast at a record 510 million tons, up 1% from 1985/86. Large crops are expected worldwide, especially in Canada, China, and the European Community, and record crops are currently being harvested in India and Pakistan. Production declines are expected in the United States, the Soviet Union, Australia, and Brazil. U.S. wheat production is now estimated at 2.18 billion bushels, down nearly 250 million from last year. Despite the reduced U.S. harvest, the total U.S. wheat supply for the 1986/87 marketing year may be a record 4.1 billion bushels, because of the record carryover of old-crop stocks. Total disappearance of U.S. wheat is forecast to be slightly higher than 1986 production. The result: U.S. ending stocks on May 31, 1987, will drop slightly from their current record levels.

World coarse grain production is projected at 819 million tons, down 3% from last season's record level. The primary reason: a sharp drop in prospective U.S. output. U.S. feed grains production is now pegged at 235 million metric tons, down 14% from last season's 274 million. Foreign production, on the other hand, is expected to climb 3%. Increased production is expected in China and the Soviet Union; reduced harvests are anticipated in Australia, Canada, the EC, and several other countries. The U.S. corn crop is forecast at around 7.6 billion bushels, 15% below last year's record. However, total 1986/87 U.S. corn supplies could reach another record, perhaps 9% above last year's, because of the projected carryin of nearly 3.9 billion bushels (also a record).

The oilseeds outlook for 1986/87 points to another record in world production—at 193 million tons—despite a projected 5-million-ton drop in the U.S. soybean crop. The world outlook is being shaped partly by changes in U.S. farm programs. While the loan rate for soybeans in 1986/87 is expected to drop 5%, the wheat and corn loan rates are declining by 25% or more. As a result, the U.S. soybean loan rate will provide a higher price floor than that for grains, and foreign oilseed production should expand. The current production projection for the 1986 U.S. soybean crop is 1.9 billion bushels; total supplies are forecast at about 2.4 billion bushels. If use exceeds production, as analysts now expect, ending stocks will decline slightly from year-earlier levels.

Cotton prospects for 1986/87 suggest a reasonably close balance between world production and demand, with little change in stocks. Beginning stocks are now estimated at a record 47 million bales. Both world production and consumption are forecast at 75.5 million bales. The production figure is only slightly below 1985's 78 million. And the United States is expected to account for all of this decline. U.S. production is now pegged at 11 million bales, down 18% from last season. The U.S. cotton outlook is closely linked to the latest farm bill which mandates that U.S. cotton be competitive in world markets beginning on August 1. USDA has, as required by the legislation, announced a formula for estimating the world price, adjusted for average U.S. quality and location. As of mid-May, the adjusted world price for the base quality cotton was about 33¢, compared with a 1986-crop loan rate of 55 cents a pound. The objective, of course, is to increase U.S. cotton exports. Economists expect the competitive prices to nearly triple the U.S. share of world cotton exports next season to 28% from 10% in 1985/86.

FARMLINE

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Farmland values dropped in 37 states last year. Nationally, the average decline amounted to about 12 percent. When will falling values hit bottom? USDA economist Bill Heneberry says the declines should slow down, but a sudden turnaround doesn't seem likely.

Japan's Fear of Food Dependence *by Hilary Sheevers* 7

Even though Japan is our largest single customer for agricultural products, the country's 45-year fear of food dependence makes it long for self-sufficiency in agriculture. It's a desire the Japanese will never be able to achieve because of their limited land area and large population.

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Tremendous advances in technology could hold the promise of even more milk from fewer cows. Economist Dick Fallert examines three technologies he says are likely to have the most significant impact on dairy farming: the bovine growth hormone (bGH), isoacids as a nutritional feed supplement, and computerized feeding and herd management.

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California emerged as the leading farm export state last year, edging out the traditional leaders, Iowa and Illinois. The reason: The value of California's exports dropped *less* on the world market than the value of exports from the two Midwestern states.

Tough Competition from Thai Cassava *by Mark Brohan* 12

U.S. producers are accustomed to some competition from Thailand when it comes to selling corn on the world coarse grain market. Lately, however, Thailand has entered a starchy root crop called cassava into the tough competition for corn's markets. Economist Sara Schwartz says increased sales of Thai cassava may have displaced up to 1 million tons of U.S. corn in 1985.

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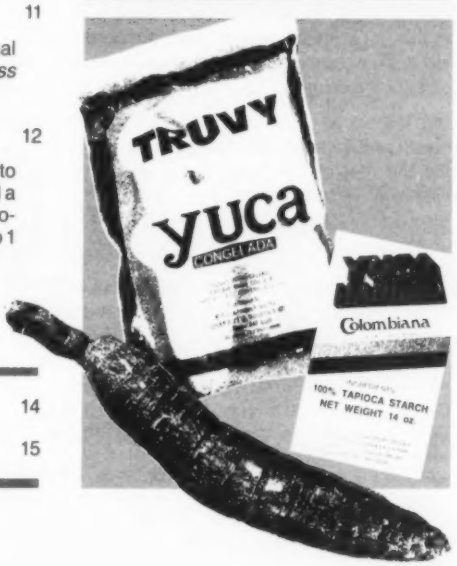


Farmland Values: Where's the Bottom

Expansion in the early and mid-1970's paid off for many farmers, but others expanded too much or too late as interest rates were rising and land values were leveling off.

The downward trend in farmland values continued during the past year, as 37 states registered declines. In 21 states, values dropped more than 10 percent, while increases were recorded in 11 mainly northeastern states.

For the nation as a whole, average farm real estate values per acre dropped about 12 percent, according to economist William Heneberry of USDA's Economic Research Service. "That makes 2 consecutive years with 12-percent declines," he says.

Heneberry's latest look at farm real estate values—including both land and buildings—covers 10 months, from April 1, 1985, to February 1, 1986. Last year's report covered the 12 months ending on April 1, 1985.

These figures are all based on average values, he explains, so they do mask the wide differences between locations and types of land. Hilly, rocky, or semi-arid grazing land, for example, is averaged with highly productive, high-priced cropland near urban centers.

Nevertheless, the relatively large declines in the latest data suggest that farmland values have not yet bottomed out in many parts of the country.

"We expect to see fewer states with minuses and generally smaller declines during the rest of this year, but a sudden turnaround doesn't seem likely given the recent numbers," Heneberry says.

Both Bearish and Bullish Signs

"All the problems clearly haven't disappeared," he adds. "There are still too many acres available relative to the demand, and some lenders are understandably cautious about financing land purchases. Some buyers may be waiting for prices to drop even further, while a number of farmers who might be potential buyers are still trying to deal with their current debt load."

In addition, some of the factors that influence buyers, including the outlook for commodity prices, exports, and farm income, are not very encouraging this year. Finally, the longer term prospect of smaller government support payments to agriculture (when scheduled target price reductions take effect) may be adding an element of uncertainty and risk for the years ahead.

Along with these general observations, Heneberry maintains that regional and sectoral problems have played a role in some land value declines. In the Texas High Plains, for example, concerns about declining water tables and the future availability of water have affected prices for irrigated cropland. Depressed conditions in the beef cattle sector have weakened the market for pasture and grazing land, especially in parts of the Corn Belt, Northern Plains, and Mountain states.

Of course, he can also point to developments that, by themselves, would tend to attract investors and strengthen land prices. Lower interest rates and oil prices, for example, will help reduce costs of production, making it somewhat easier to turn a profit from a piece of farmland.

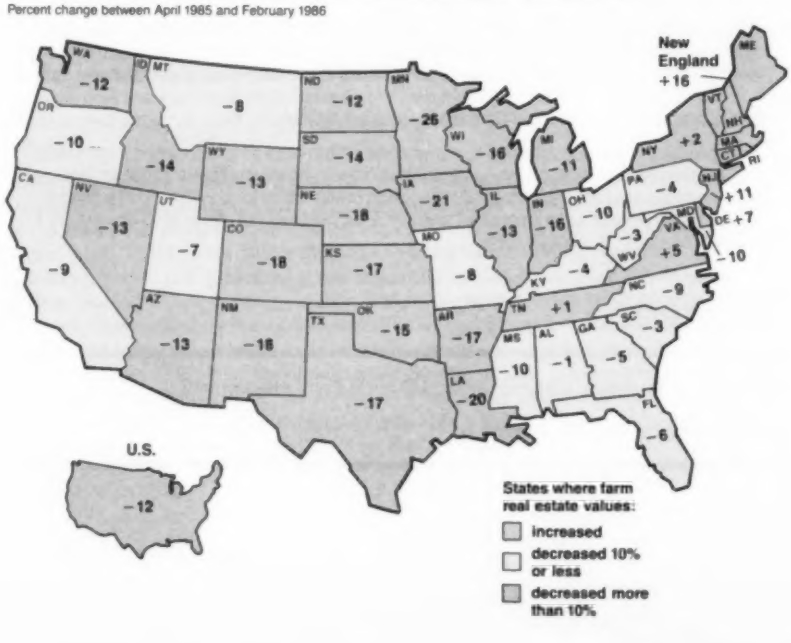
Another bullish indicator is the ratio of cash rents to land values. As land values have fallen, so have cash rents—but not nearly as fast. As a result, the going rents charged by landowners provide a fairly high return relative to the current cost of land. The ratio of rents to land value is now high enough, Heneberry says, to make farmland more attractive than it has been in many years for an investor who wants to buy land and rent it out for farming.

Heneberry suggests, however, that the positive, price-enhancing factors have yet to overcome the psychology of downward trending farmland markets.

The downward momentum can be as stubborn, as difficult to reverse, he says, as the momentum of upward trending markets and the expectations of continued capital gains that they generated. In the late 1970's and early 1980's, particularly, rising markets were slow to recognize changing economic

Farm Real Estate Values Decline in 37 States and Rise in 11 Others

Percent change between April 1985 and February 1986



conditions and the risks implicit in prices that had strayed far out of line with the earning capacity of farmland.

In Heneberry's view, it shouldn't be too long before the market perceives that land values, and production costs, have fallen to the point where investments in farming can be profitable—and that should halt the slide in land prices.

Who's Down, Who's Up?

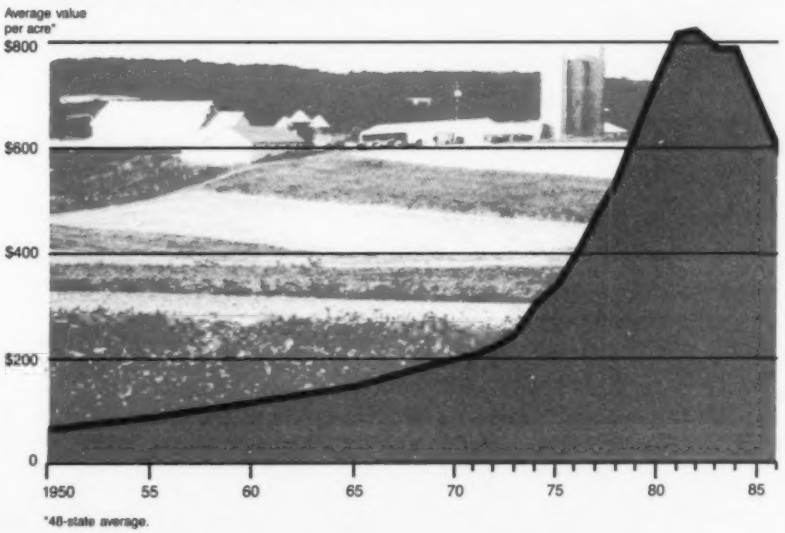
The downward trend in farmland values began 4 to 5 years ago, after 28 years of uninterrupted appreciation. On February 1, 1986, U.S. farmland values averaged $596 an acre, down from $679 last year and nearly a 28-percent decline from the historical high of $823 per acre on April 1, 1982. (The latest value figures range from a high of $3,913 per acre in New Jersey to a low of $134 in New Mexico.)

"Average U.S. farmland values per acre are now somewhere between the levels set in 1978 and 1979," says Heneberry. "Real values, after adjusting for inflation, have retreated to the levels of the mid-1960's."

Not all states, however, have been registering declines. "Between 1985 and 1986, dollar values rose substantially in New England and New Jersey, while Delaware, New York, Virginia, and Tennessee recorded smaller gains," he says.

In New England—where competition for farmland from residential, commercial, and industrial buyers is strong—values increased 16 percent in the last year and about 50 percent, on average, since 1981. In Texas, which did show a 17-percent decline from 1985 to 1986, values are still about 20 percent higher than they were

After Climbing from $200 in 1970 to More Than $800 an Acre in 1982, Farm Real Estate Values Have Dropped Nearly 30%



*48-state average.

At the Core of Ag Problems

Declining land values have been at the very core of agriculture's problems over the last several years, according to analysts of the Economic Research Service.

Between 1970 and the early 1980's, farm real estate values, on average, more than quadrupled. The steady, rapid appreciation was far out of line with the growth in the earning capacity of the land. It was propelled by a number of factors: high inflation rates in the general economy; rising exports and projections that a growing world population would depend increasingly on the output from America's farms; low real interest rates and plentiful credit; greater attention to the fact that land is a limited resource; and fairly steady gains, overall, in net cash income from farming.

Perhaps the most important stimulus by the late 1970's, however, was the self-perpetuating assumption in the farm real estate market that the rapid inflation in land values would continue. More than half the returns on farm investment were coming in the form of capital gains, primarily on land.

While the returns a farmer could earn by producing crops and livestock were rising slowly and could vary sharply from year to year, the returns to the ownership of farmland were very dependable and very high. Land was appreciating at an average annual rate of about 16 percent in the late 1970's.

The capital gains encouraged farmers and farmland investors to continue bidding up land values to get access to all this "paper wealth." The paper wealth could easily be converted into real money by using the inflated land values as collateral to help meet cash flow needs, invest in new facilities, or buy more land.

Expansion, in fact, seemed to be a wise business decision supported by the "experts."

The average value of Iowa farmland, for example, was about $600 an acre in 1974. Let's say a farmer bought 500 acres at that price back then. It would have cost $300,000. If the land appreciated at the average rate of Iowa farmland, the 500 acres would have been worth more than $900,000 by 1980. Suppose an adjacent 500-acre farm went on the market. Even though the farmer would know that the earning capacity of the additional 500 acres couldn't support a debt of, possibly, three-quarters of a million dollars, the farmer would still have been tempted to buy the acreage both to enlarge his operation and to reap future capital gains.

Expansion in the early and mid-1970's paid off for a great many farmers, but others expanded too much or too late as interest rates were rising and land values were leveling off. They could support their newly acquired debt only when they were getting large capital gains, mainly in land values. They were counting on being able to borrow against continued capital gains to meet their debt payments and other cash flow needs. For many of them, all that was needed to bring on a crisis was for farmland inflation to slow. It did that, and more.

The bottom fell out of the land market, and some farmers could not get the additional credit or even support their current debt. The underlying causes can probably be traced to a dramatic slowdown in inflation throughout the general economy, a downturn in exports, a sharp rise in real interest rates, a general tightening up of credit, and the gradual realization in the farmland market that the inflated values weren't supported by the economics of farming.

The downturn in farmland values began as lenders tightened up on credit and called in existing loans, and as more farmland came on the market because some farmers couldn't manage their debt payments. The more that values dropped, the greater the number of farmers who had to sell off land or weren't in the position to buy the land going on the market, so the downturn accelerated, feeding on itself.

Many economists contend that it was this decline in the value of farm assets, particularly land, that precipitated the "crisis" for many of the farmers now facing severe financial stress and for many of those who have already succumbed to it.

back in 1981 because of steady value gains from 1981 through 1984.

On the other hand, average values have fallen around 50 percent or more since 1981 in six adjoining states—Iowa, Nebraska, Minnesota, Indiana, Illinois, and Ohio. In Iowa, farm real estate values dropped to $841 an acre this year, down from $1,999 in early 1981 and the lowest they've been since 1975.

The latest figures show some improvement for five of the six states. The exception was Minnesota, which registered a 26-percent drop in farmland values, the largest decline of any state. The other five midwestern states didn't escape double-digit declines, but the percentage drops were not as large as they were the previous year.

"This may be a sign that value declines in the Corn Belt are beginning to taper off, but it's too early to be absolutely sure," says Heneberry. "The developments in agriculture and the general economy over the last few years have made it very difficult to predict future movements in farm real estate values." □

[Based on information provided by economist William Heneberry of the Natural Resource Economics Division, Economic Research Service.]

Japan's Fear of Food Dependence

The Japanese symbol for agriculture.

When Americans hear "Japan," they may often think "trade imbalance." And for good reason. In 1985, the scales were tipped $40 billion in Japan's favor.

But there is another view of Japan: A country trapped in a "catch 22" in which its fears over food dependence on other nations clash with the reality of a limited area and a large population that make it impossible to become entirely self-sufficient.

The predicament has paid off handsomely for U.S. agriculture. Japan has remained America's single largest customer of agricultural products for more than 20 years. In fiscal 1985, Japan bought $5.7 billion worth of American farm products, about a fifth of all U.S. farm exports. But because of the Japanese fear of food dependence, they protect their farms with what may be the bane of U.S. trade: tariffs, quotas, and other measures. Japan also protects itself by attempting to cultivate other sources so it has access to more than one supplier. These attempts have not been that successful, however, and the country is more dependent on fewer suppliers than it was 10 years ago.

Fears of Dependence

The key to Japan's concerns over food dependence, explains Bill Coyle of USDA's Economic Research Service, is that "Japan still remembers the hunger of World War II." Many of the country's resources were diverted to the war effort. This, along with a shrinking empire, reduced food supplies and led to severe shortages.

Fear of dependence has made food self-sufficiency a very popular concept in Japan, and has fueled political pressure on Japanese policymakers to protect and nurture their domestic agriculture. Support for Japanese agriculture is also popular because a large percentage of the population still has strong ties with the farm community.

Just how strongly they support their agriculture and fear dependence may be best explained by a poster that was pasted up by a Japanese farm cooperative organization throughout Japan during the October 1982-April 1984 round of beef and citrus negotiations with the United States. The poster depicts a Ronald Reagan look-alike dressed in a Superman costume, with farm products under his arm, swooping down on a defiant Japan represented by Mount Fuji.

The Japanese are well aware that they cannot escape from the limitations of their islands.

But despite the strong political pressure for domestic farm support and self-sufficiency in agriculture, the Japanese are well aware that they cannot escape from the limitations of their islands. "Agriculturally, Japan is a resource-poor nation," Coyle explains. "The Japanese just don't have the kind of choices that we do in terms of agriculture. There isn't enough land to produce the food Japan's large population requires."

A Labor-Intensive Agriculture

Japan's agriculture also suffers from inefficiency. The nation has a very high yield per acre for most of its crops, Coyle explains, "But farm worker productivity is quite low. For the same amount of time spent, the American farmer produces much more."

This low yield per farm worker stems from their labor-intensive, tiny farms—usually only a few acres each, Coyle explains. Farm size has been limited by land tenure laws enacted during the U.S. occupation after World War II. Socially, this may have been a good plan. But Japan's small farms have required government support and, in some cases, strict protectionist measures to keep Japan's farmers shielded from international competition.

Japan: A Long Way from Food Self-Sufficiency[1]

Commodity	Japan	United States
	percent of self-sufficiency	
Grains	33	162
Food	69	218
Feed	2	152
Beans[2]	7	142
Vegetables	97	99
Fruit	81	95
Meat	81	97

[1]Based on 1980 Japanese data and 1978 U.S. data. [2]Beans include soybeans, red beans, and shelled peanuts.

Source: Japanese Ministry of Agriculture, Forestry and Fisheries.

The beef industry is one example of a strongly protected agricultural sector in Japan. The country realizes that it would be very expensive to become self-sufficient in beef because of the small-scale nature of Japanese beef production, Coyle says. "Efforts to expand production in line with consumer needs have been constrained by limited pasture and forage production and the beef industry's dependence on the slow-growing dairy industry (to provide dairy steers and culled cows for slaughter)," he adds.

In 1984, the Japanese government agreed to expand beef import quotas—from 141,000 tons in Japanese fiscal year 1983 to 177,000 tons in 1987. As a result of these increased imports and a slower-than-projected growth in domestic beef production, Japan's beef self-sufficiency should decline through the rest of the 1980's.

On the other hand, Japan's relatively efficient meat enterprises (poultry and pork) should maintain high levels of self-sufficiency.

Although Japan's livestock industry is small and still in its formative stages, it depends on imported feedstuffs for at least three-quarters of its feed supply. Consequently, Japan is one of the largest importers of feedstuffs in the world. The United States, with its comparative advantage and its capacity to produce and market large amounts of grains and oilseeds, will maintain a prominent position in this Japanese market, according to Coyle. Even though efforts to increase U.S. exports of processed and value-added items will intensify, feedstuffs will continue to be the main component of U.S.-Japanese trade. □

[Based on information provided by economist Bill Coyle of the International Economics Division, Economic Research Service.]

Bovine Biotechnology

Dairy farming has gone through dramatic change since the 1950's, and currently emerging technologies promise to continue reshaping the industry.

In the last few decades, improved equipment and facilities, artificial insemination, and an ever-expanding knowledge of animal breeding and nutrition have contributed to large advances in productivity.

"The structure of the industry itself has been transformed by the increasing productivity and the rising costs of remaining competitive," says dairy analyst Richard Fallert, an agricultural economist with USDA's Economic Research Service.

The figures bear him out: Between 1965 and 1985, the total number of cows on U.S. farms fell more than 25 percent, and the number of farms with dairy cows dropped about 75 percent. Meanwhile, the average amount of milk produced per cow rose about 60 percent, from 8,300 pounds to 13,030 pounds per year. Total milk production climbed 16 percent.

Will the advances of the 1980's and 1990's speed up the spiral of fewer and larger farms—and a smaller U.S. dairy herd—producing more milk? The answer could well be yes, according to Fallert. The major reason: the tremendous advances in technology.

Fallerts sees three major technologies on the horizon—bovine growth hormone (bGH), isoacids as a nutritional supplement, and computerized feeding and herd management.

bGH: More With Less?

In dairying, biotechnology and bGH are almost synonymous right now, probably because bGH promises the greatest potential for change in the industry.

This growth hormone isn't a wonder drug, but it may mean sharp increases in milk output per cow. The hormone is naturally manufactured in small amounts in the cow's pituitary gland. Injection of additional bGH increases body metabolism, which in turn raises blood flow through the mammary gland and increases milk production. In the early days of experimentation, the only hormone available was extracted from the pituitary glands of slaughtered animals. This process was slow, expensive, and produced limited quantities.

The bovine growth hormone isn't a wonder drug, but it may mean sharp increases in milk output per cow.

Advances in biotechnology have changed all that. Now the bGH gene can be transferred to ordinary bacteria cells through genetic engineering techniques.

The gene responsible for bGH is extracted from the pituitary glands of cows and is then scientifically linked to harmless strains of *E. coli* bacteria. The bacteria multiply rapidly, enabling bGH to be reproduced on a large scale. Under current technology, bGH is administered by injections that must be given to dairy cows every day to be effective.

"Research has shown milk yields increase 10 to 40 percent within 3 days of initial injections. A farmer will probably get a smaller increase under field conditions," Fallert says.

There are also some possible drawbacks.

Cost is a major factor. No one knows whether bGH will be initially produced by several manufacturers, and therefore be competitively priced, or whether only one firm will manufacture the hormone and possibly command a high price. Another drawback is the inconvenience of daily injections.

Of course, as with all technologies, the cost per dosage should go down as bGH is more widely produced and adopted. As for the daily injection, according to Fallert, research is underway to develop labor-saving, time-release implants of bGH.

One further drawback to bGH use is the larger amount of nutrients needed to sustain cows with increased milk production. However, overall feed needs may drop because fewer cows are required to produce the increased amount of milk.

"A real benefit is that a smaller percentage of feed goes toward the maintenance of the herd, and a larger percentage goes into milk production," Fallert says.

Use of bGH may be profitable for efficiently run dairy operations, but even among these high-producing farms, bGH might not be a bonanza to some, especially those in hot, humid regions.

"The heat and high humidity in some areas of the South and Southwest lower the amount cows eat and the rate at which they convert feed into milk. Under these heat and humidity stress conditions, milk output gains may not be as readily achieved as in more moderate climates—possibly making the use of the hormone unprofitable for southern farmers," Fallert says.

"Whether bGH would give an advantage to the northern dairy industry remains to be seen. Farmers still might not adopt this technology as readily as we think they will," Fallert says.

The Food and Drug Administration (FDA) hasn't yet approved bGH for general use. Further studies are required by FDA, but the agency will probably approve the use of the hormone within a decade, most likely within 3 years, Fallert says.

Better Fed Animals

Another potential for increased milk production lies in improved nutrition.

Research in animal nutrition has led to the development of isoacids, a generic term for a mixture of four fatty acids. These fatty acids are naturally found in the rumen of cows, but additional amounts can be fed to increase their concentration in the digestive system.

Increasing the concentration of these fatty acids allows more nutrients from a given amount of feed to be available to the cow to produce milk.

"In university studies, isoacids increase feed efficiency and boost milk production 8 to 10 percent. However, under field conditions, a farmer should expect a gain of 3 percent, on average," Fallert says.

One drawback of bGH: A larger amount of feed is needed to sustain cows with increased milk production.

FDA approved isoacids for commercial use in 1984. One company is currently marketing its isoacid product in several states. By the end of this year, the company plans to make the product available throughout the United States and around the world.

Cows and Computers

Efficient milk production isn't only a matter of what you feed, but how you feed it. Computers are now helping dairy farmers feed each animal the right amount to maximize production and minimize costs.

Computers ensure that low-producing cows are not overfed and that high producers have all the nutrition they need for maximum output.

According to Fallert, computerized feeding can result in a 5-percent increase in milk yield per cow, without raising the total feed requirement for the herd.

"There are several types of computerized feeding systems on the market. Costs range from around $12,000 for a unit that can accommodate a herd of about 50 cows to around $60,000 for equipment that can handle 500 animals.

The popularity of computerized feeding equipment is increasing, but once again, the question is whether the farmer can afford the initial investment, Fallert says. □

[Based on information provided by economist Richard Fallert of the National Economics Division, Economic Research Service.]

Too Much Technology?

Consider mountains of dairy products in government storage right now, and the new programs to encourage some dairy farmers to leave the business. Given these conditions, should farmers be planning a future that includes more efficient dairy operations that can produce even more milk?

That is not an easy question, admits economist Richard Fallert.

"Given today's surpluses, many observers would like to see at least a temporary halt to further technological change in the industry. This would allow time for the new dairy programs to help stabilize production, and it might avoid compounding an already difficult situation for many dairy farmers."

However, he isn't sure that such a halt is possible.

"In a free market, technological change doesn't stop just because we're dealing with a surplus. In fact, a surplus and lower milk prices may spur the adoption of new cost-cutting, yield-boosting technologies. The appeal is not necessarily larger production, but rather the ability to reduce the cost of producing each gallon of milk."

Many analysts view agricultural technology as a double-edged sword. Certainly, it has been a key source of strength for the U.S. food system. In 1900, around a third of the population was engaged in farming. Today, less than 3 percent of the population produces a plentiful supply of food, leaving more than 97 percent of the population free to contribute to the economy in other ways. Technology has increased yields and cut unit production costs to the point that Americans spend a smaller share of their income on food than people in any other nation.

Continued technological progress is essential to the long-term competitiveness of U.S. agriculture.

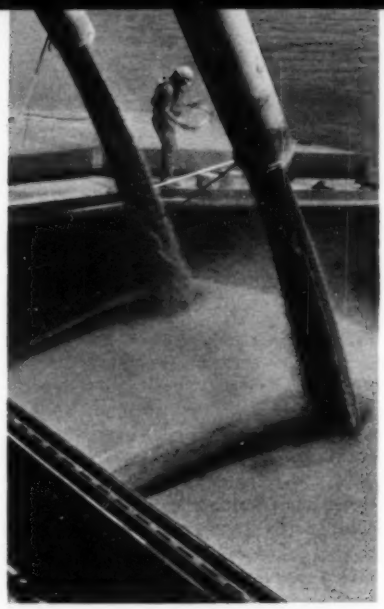
On the other hand, rapid technological change imposes jarring structural and financial adjustments on farmers. Large investments in technology have eroded farmers' margins, yet they are forced to either keep pace or leave the sector. This "technological treadmill" has been a major contributor to the continuing drop in U.S. farm numbers and growth in farm size.

"If the dairy technologies now on the horizon cannot offer greater efficiencies in production, they will be rejected by farmers. But if the technologies allow dairy farmers to produce more milk from fewer animals at a lower overall cost, they will be developed and used," Fallert says.

Does this mean more production on top of current surpluses? In the short run, rapid gains in technology could jeopardize current efforts to deal with surpluses, Fallert says. In the longer run, however, technology doesn't determine the level of production. Market demand, government programs, and price determine how much milk is produced. If fewer farmers are needed to produce all the milk the market and the government are willing to absorb, prices will drop and there will be further adjustments toward a smaller national dairy herd and fewer but larger dairy farms.

"Based on the past 20 years, it seems likely that the farmers still operating dairies by the turn of the century will be those whose cows are the most productive—those who can produce milk at the lowest cost," Fallert says.

Top Export Nations



Brazil, Canada, and Argentina moved up in the rankings, several European nations lost ground, and the United States held onto its wide first-place lead with an 18-percent share of the total value of world agricultural exports.

In brief, that's the picture that emerges from data recently compiled by USDA economist Art Mackie of the Economic Research Service. Mackie examined the latest trade statistics published by the U.N. Food and Agriculture Organization to determine the rankings of the world's major agricultural exporters, each nation's share of exports, and changes in shares and rankings from 1979 to 1984. For purposes of comparison, he consolidated the 6 years of export data into three 2-year averages for 1979-80, 1981-82, and 1983-84.

The United States Is Far Ahead of the Pack, But Some of Our North and South American Neighbors Are Capturing an Increasing Share of World Agricultural Exports

Top 15 exporters[1]	Share of total world agricultural exports[2]		
	1979-80	1981-82	1983-84
	percent		
United States	18.1	18.7	18.0
France	7.7	7.6	7.4
Netherlands	7.0	6.9	6.9
Brazil	3.8	4.0	4.6
West Germany	4.5	4.6	4.5
Canada	2.9	3.5	3.9
Australia	3.7	4.0	3.4
United Kingdom	3.4	3.4	3.2
Argentina	2.5	2.5	2.9
Belgium-Lux.	2.6	2.6	2.7
Italy	2.6	2.6	2.4
Cuba	2.1	2.1	2.4
Denmark	2.3	2.2	2.2
Malaysia	1.8	1.4	1.9
Thailand	1.4	1.8	1.7

[1]Rankings for 1983-84. [2]Based on aggregate value of agricultural exports, measured in U.S. dollars, calculated from trade statistics published by the Food and Agriculture Organization, United Nations. Other data sources may yield slightly different percentages because of different methods of reporting export volume and value.

The United States maintained its firm grip on the number one spot. The U.S. share of world farm trade, by value, was roughly equivalent to the combined shares of the next three largest exporters—France, the Netherlands, and Brazil. The U.S. share climbed from 18.1 to 18.7 percent, and then declined to 18.0 percent in 1983-84. Although the percentage in the last 2-year period was slightly lower than it was in the first, no clear trend can be deduced from the up-and-down pattern, Mackie says.

The overall U.S. predominance among exporters stemmed largely from the big American advantage in three major bulk commodities—wheat, corn, and soybeans. The United States held a 37-39 percent share of the total value of world wheat and flour exports, a 65-72 percent share of world corn exports, and an overwhelming 81-86 percent share of world soybean exports.

Among these three commodities, the closest challenge to the U.S. lead came in the wheat market. Canada captured a 21-percent share of world wheat exports in 1983-84, up from about 17 percent in 1979-80.

Although the U.S. market share for all three commodities dropped slightly in 1983/84, our nearest rival in the overall rankings also registered a decline in market percentage. France saw its aggregate market share decline from 7.7 to 7.6 and finally to 7.4 percent of world farm exports, by value. It held onto the number two position, but several other European nations dropped in the rankings. Among the losers were West Germany, the United Kingdom, Belgium-Luxembourg, and Italy.

With exceptions (wheat and corn from France, for example), some of the toughest competition for market shares seems to be coming from our neighbors to the north and south, rather than from the European Community.

It's worth noting, says Mackie, that four of the world's top 10 agricultural exporters are located right here in the Western Hemisphere—the United States, Brazil, Canada, and Argentina. Except for the United States, all increased their shares of world trade from 1979-80 to 1983-84, and all moved up in the rankings. Brazil moved from fifth place to fourth (bumping West Germany), while Canada moved from eighth to sixth, and Argentina from eleventh place to ninth. The only other nations among the top 15 to increase their shares, or their rankings, were Cuba, Malaysia, and Thailand.

"Given the importance of exports to U.S. agriculture, we have to pay close attention to trends in market shares," Mackie says. However, he does urge some caution in interpreting the data.

"Rankings and shares fluctuate some from year to year, affected by the volume of each nation's exports, the prices for its export products, and ups and downs in overall world trade. Also, because my figures compare each nation's exports in terms of U.S. dollars, some shifts in value shares may partly reflect changes in currency exchange rates vis-a-vis the dollar. For example, the dollar's rise against many European currencies during this period would tend to depress European value shares, simply because any export earnings in francs, marks, or pounds would convert to fewer dollars," he says.

"Given all these variables, we can't automatically assume that the market share trends observed from 1979 to 1984 will necessarily continue in the years ahead." □

[Based on information provided by economist Art Mackie of the International Economics Division, Economic Research Service.]

Top Export States

California emerged as the leading farm export state last year, according to analysts of USDA's Economic Research Service.

"For the first time since we started producing these statistics in 1964, California was number one," says ERS economist Steve Milmoe.

It wasn't any surge in sales that steered the nation's most populous state ahead of Iowa and Illinois, the traditional leaders for the last several years. Rather, California simply lost less (in its export values) than the two Midwestern states.

In fiscal year 1985, California exported some $2.7 billion worth of farm goods, a drop of $87 million from fiscal 1984.

Iowa's export sales, on the other hand, plunged more than $800 million from fiscal 1984 to fiscal 1985. And the value of Illinois' farm exports fell nearly $600 million in the same period. Iowa led the list of exporting states in fiscal years 1981, 1982, and 1984. Illinois was the top export state in fiscal 1983.

"We've seen this coming with the recent major declines in the value of U.S. feed grain and soybean exports, and the composition of exports in states like Iowa and Illinois," Milmoe notes.

Less vulnerable, he says, is California, which derives its export income from a wide variety of commodities.

Milmoe doesn't believe that California has any long-term lock on first place, however.

"The United States has a comparative advantage in producing feed grains and soybeans," he says. "This has been a particularly bad time for these commodities, which should eventually recover and benefit states like Iowa and Illinois."

Farm exports fell for most states as the nation's total farm sales slid from $38 billion in fiscal 1984 to $31.2 billion in fiscal 1985, a drop of 18 percent.

"The most critical factor was the substantial decline in foreign purchases of U.S. wheat and soybeans," says Milmoe. "Overseas demand for these products fell to their lowest levels in nearly a decade."

He cites Kansas and North Dakota as states that felt the "dramatic decline in overseas wheat sales." U.S. wheat exports dropped by one-third to $4.5 billion in fiscal 1985.

Milmoe measures export sales by examining overall production of a particular crop and finding what percentage is contributed by major producing states. Export values are then assigned based on these percentages.

"If additional information exists—such as estimated feed use by state, or port data—it is incorporated into the estimating procedure," says Milmoe.

ERS analysts recently revised some of the methods used to compute the export values of states for fiscal years 1981 to 1985.

"For example, we broke down rice exports into long, medium, and short grain," says Milmoe, "and thereby found that we had underestimated Arkansas' rice exports by 20 percent."

Researchers also reduced the number of states designated as "exporting states" for any given commodity to ensure that exports from states with large surplus production—which are more likely to export—would not be undervalued.

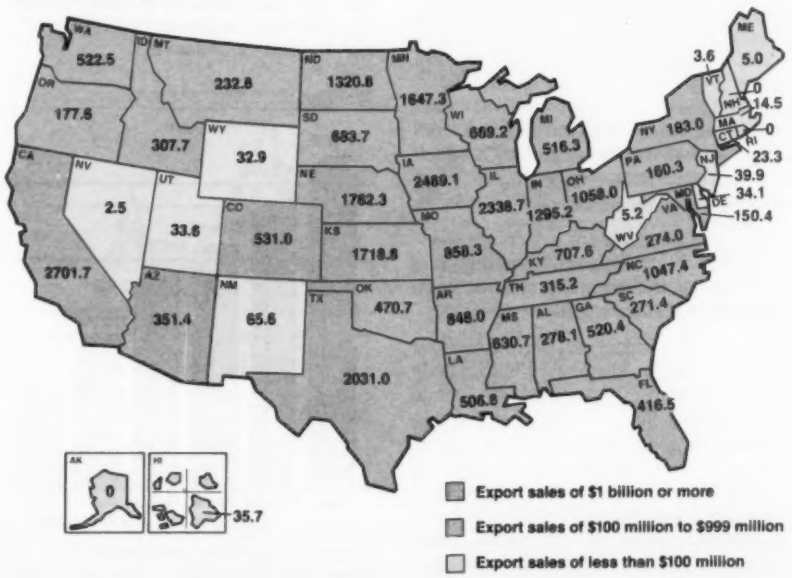
Milmoe says such refinements in the measurement of export values have led to some surprising results.

"In fiscal 1984, live animal and meat data were reviewed and distributed based on shipments by U.S. Customs districts because a large percentage of the live animals were racehorses shipped from Kentucky," says Milmoe. □

[Based primarily on information provided by economist Steve Milmoe of the International Economics Division, Economic Research Service.]

With Major Declines in Export Sales of Iowa and Illinois, California Was Top Export State in Fiscal 1985

Fiscal 1985 export sales, in $ millions



Tough Competition from Thai Cassava

Cassava is a versatile food crop. People in many countries eat the root by frying, boiling, or baking it. Cassava can also be processed into flour, starch, and meal.

American corn producers are accustomed to some competition from Thailand, which produces enough corn to rank among the world's major exporters of coarse grains. Lately, however, Thailand has entered another challenger into the tough competition for corn's markets.

The challenger is a starchy root crop called cassava, also known as manioc or tapioca. Thailand has long been the world's leading cassava exporter, but virtually all of the exports used to go to the European Community (EC) where cassava is mixed into feed rations for swine and poultry.

Large Thai surpluses and EC import limits forced Thailand to widen its sights. Low cassava prices provided a competitive edge.

"Last year, Thai traders launched an aggressive and successful campaign to expand their markets," says economist Sara Schwartz of USDA's Economic Research Service. Altogether, about 1.7 million tons of cassava were shipped to Japan, Portugal, the Soviet Union, Taiwan, South Korea, and North Korea.

All these nations, except North Korea, are regular customers for U.S. corn, and all five customers reduced their imports of U.S. corn last year. In fact, Thailand cassava sales may have displaced up to about 1 million tons of U.S. corn sales, Schwartz estimates. While not a huge drop (U.S. corn exports to all markets totaled 46.3 million tons in fiscal 1985), it was enough to make U.S. farmers take notice.

"U.S. corn producers are very competitive," she says, "and cassava represents one more threat to their share of world grain markets, which are already depressed."

But cassava's impact isn't entirely negative for U.S. farmers, adds Robert Tetro, a trade and marketing analyst with USDA's Foreign Agricultural Service. Soybean meal is needed in feed mixes as a protein supplement to starch-based cassava, and the United States is the world's leading producer of soybeans. A few of last year's cassava customers did increase—albeit slightly—their purchases of U.S. soybeans.

New Competition from an Old Staple

Still, the added competition, Schwartz notes, sent some corn farmers to the libraries, or to the phone, to find out all about this mysterious new rival.

What she tells them, of course, is that cassava is not a new crop. It is a food staple that has been around for 4,000 years; one that provides needed starch to the diets of millions of people in less developed nations. In terms of harvested tonnage, more cassava is grown throughout the world each year than such familiar crops as soybeans and cotton.

Cassava roots are processed into flour, pellets, chips, and starch. Because the cassava plant is made up of about 62 percent water, most of the plant's weight is lost during the drying portion of the production process. According to James Duke, a tropical plants expert with USDA's Agricultural Research Service, a ton of fresh roots yields only about 700-850 pounds of processed cassava.

It is not produced in the United States because it requires a hot and humid growing environment, but around 100 African, Asian, and Latin American countries grow cassava. In 1985, Brazil, Zaire, Indonesia, and Thailand were the world's largest producers.

Unlike Thailand—which earmarks about nine-tenths of its crop for export—most nations consume cassava internally. People in some nations, for example, eat the root directly by steaming, roasting, or boiling it. In other countries, it is used to make bread dough, fried as a kind of "potato chip," and used as flour for other baking needs.

For food uses, its natural competitors tend to be wheat and rice. During the 1970's, in fact, cassava demand declined because larger world production of food grains, particularly wheat, was accompanied by rising incomes and the desire for more varied, convenient foods in less developed nations.

Despite this challenge to its traditional domestic uses, only about 13 million tons of processed cassava products (equivalent to about 35-40 million tons, fresh root weight) were exported in 1985 out of nearly 136 million tons of world fresh root production.

Many industrialized nations regularly buy small quantities. Even the United States imports 30,000-50,000 tons of cassava a year, primarily for use as a starch in industrial glues. Some cassava also comes into Hawaii for use as a feed mix ingredient.

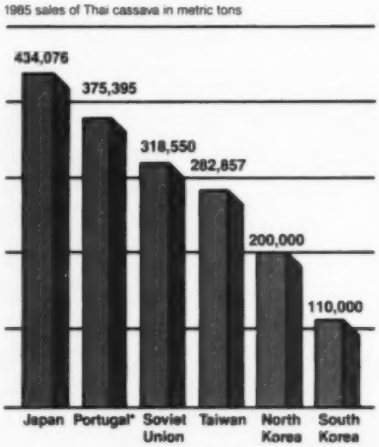
Recently, however, cassava has gained importance as a feed mix ingredient in the EC where it competes with both grain and nongrain feeds.

EC Limits and Thai Surpluses

Cassava is classified as a "nongrain feed" import by the EC and allowed to enter under a minimal tariff. According to Schwartz, that classification makes cassava a less expensive alternative to imported and domestic EC feed grains.

She reports that Thai exports to the EC rose from a mere 340,000 tons in 1967 to about 6 million tons in 1978. Then, the EC moved to put a cap on cassava because rising imports were providing too much competition for the EC's own growing feed grains production.

The U.S. Lost Some Corn Sales When Six Markets Outside the EC Took 1.7 Million Tons of Cassava



*Portugal became a member of the EC this year.
Source: Thailand Board of Trade.

Under pressure, Thailand agreed to limit future exports to the EC. A series of limits led to flexible export quotas in 1982. Under this arrangement, Thai traders were allowed to ship a total of 10.5 million tons during the two-year period 1983-84 and a total of 10 million tons in 1985-86. To meet these benchmark quotas, Thailand had to reduce its EC exports to about 4.7 million tons in 1985, down from 5.7 million in 1984.

Thailand knew it had a marketing problem. Cassava is Thailand's second leading agricultural export earner behind rice, and it provides income for the nation's poorest farming region. Moreover, cassava production had been rising and surpluses had been mounting since 1983.

Thailand's response to the EC quotas was largely responsible for the surpluses. To protect its farmers from falling prices when quotas were implemented, the Thai government adopted a policy that encouraged exporters to accumulate stocks. Meanwhile, farmers were urged to diversify into other crops.

Instead, the high cassava prices provided the incentive for farmers to produce more, and cassava production reached about 22 million tons (roughly 7 million tons on a processed basis) in 1985. Coupled with 1.5 million tons of carryover stocks, the exportable surplus amounted to around 8.5 million tons.

With only slightly over 6 million tons of sales lined up, cassava's export price plunged from an average of $105 per ton in 1984 to a low of $38 a ton by early 1985. Thailand turned the price decline to its advantage. Thai traders marketed cassava internationally as an inexpensive and versatile commodity. As a result, its cassva sales to Japan, Taiwan, Portugal, the Soviet Union, North Korea, and South Korea reached 1.7 million tons, up from 445,000 in 1984. According to Schwartz, the cassava probably replaced around 1 million tons of corn, much of which would likely have been supplied by U.S. farmers.

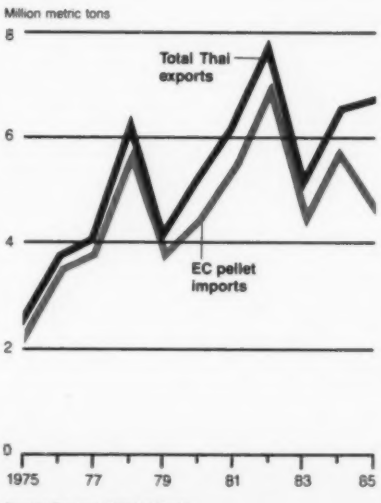
Permanent New Markets?

Schwartz predicts that competition from cassava will continue. In response to low prices, Thailand cut back its production to an estimated 17 million tons this year—a 26-percent decline from 1985. On the other hand, the country still has some cassava stocks left over from last year.

Moreover, prices have recovered and Thai farmers who are now making planting decisions for 1987's crop are expected to increase production—perhaps substantially. Prices may drop again, but Schwartz notes that many Thai farmers can make a profit on cassava priced as low as $20 a ton.

According to the economist, the Thai government's land diversification program has not been as effective as originally hoped.

Until Last Year, About 85% of Thailand's Cassava Exports Went to the EC



Source: Thailand Board of Trade.

Some farmers have shifted to the planting of alternative crops such as corn and kenaf (used in the making of rope and canvas). But high cassava prices and low production costs are keeping many producers from enrolling in the program.

Another factor that could influence Thai cassava production and competition is the annual EC import quota. The EC has proposed to limit imports of Thai cassava to about 5.5 million tons per year for 1987-91. Thailand, however, is pushing for a higher limit.

The U.S. Food Security Act of 1985 (the official title of the new farm bill) may also have an impact on cassava's ability to further penetrate corn's markets. Lower loan rates and more competitive corn prices may reduce cassava's advantage. It may also keep Thai producers from shifting from cassava production to corn production.

Cassava production is strongly influenced by price, Schwartz explains. When prices are high, Thailand produces more cassava, and U.S. corn growers are faced with increased competition for their markets. If production rises in 1987, as expected, Thailand may again be looking to expand its markets.

"Thailand's marketing approach of 'try cassava, you will like it' has been successful," she says. "It paid off in increasing the world's awareness of cassava, and more countries may consider cassava as a feed mix ingredient in the future if the price is right and the supply is available." □

[Based on information supplied largely by economist Sara Schwartz of the International Economics Division, Economic Research Service.]

AGRICULTURAL ROUNDUP

Today, at least one person in about half the nation's farm families has an off-farm job. In 1960, only a third of farm families had someone working off the farm.

Gearing Up for GATT

U.S. trade officials are looking forward to the fall season.

That's when they're hoping to meet with other major trading nations to discuss the rules governing global trade—and U.S. complaints that some countries compete by unfairly subsidizing their exports.

The setting will be Geneva, Switzerland, where representatives of the United States will convene with other members of the General Agreement on Tariffs and Trade (GATT). There are 90 countries which belong to GATT and another 30 nations which generally observe its provisions. Together they account for about four-fifths of world trade.

"High on the U.S. agenda, certainly, will be an effort to tighten the GATT rules regarding export subsidies for agricultural products," says Edward Wilson, a trade analyst with USDA's Economic Research Service.

The GATT subsidies code currently states that countries cannot use such subsidies to capture "more than an equitable share" of the market. But American officials, who have watched U.S. farm exports fall sharply in recent years, claim that the code hasn't prevented abuses.

"The European Community, for example, has used agricultural export subsidies to help its high-cost producers compete on world markets," says Wilson.

The concerns of other agricultural producers may also be voiced in the upcoming GATT deliberations. "For example, developing country exports are often heavily agricultural. U.S. officials must recognize that developing countries need to export their farm products in order to pay back much of their debt."

As a result, their negotiators tend to focus on protectionist measures in industrialized nations, including the United States.

"We have to balance gaining more access to foreign markets with a willingness to open our markets, including agricultural ones, to more competition," says Wilson.

GATT discussions are also expected to include a look at how the organization enforces its rules.

"The United States would like to see agricultural export subsidies come under new and more effective discipline under GATT," says Wilson. "Even when GATT finds a member nation isn't trading by the rules, the dispute settlement process can be a frustrating one. It takes a long time to decide a case, and a number of GATT decisions have been rendered largely ineffective because nations that lose disputes often block adoption of GATT panel conclusions."

He notes that the GATT Council, which oversees the organization, cannot adopt a recommendation from a panel "by consensus" if one member—the "loser," for example—objects.

Another priority for the United States is expanding GATT rules to include the burgeoning field of services, particularly computer and financial services.

"These are trade areas in which U.S. technology has given us an edge," says Wilson. "Unfortunately, these services are often subject to tighter restrictions than imports of physical commodities."

The major objections to including negotiations over services in the next GATT round have been raised by developing nations which want to shield their young service industries and develop local expertise.

U.S. officials aren't going to the GATT talks with the idea that the negotiations can be a cure-all.

"GATT is largely a trade mechanism," says Wilson. "It won't necessarily improve all aspects of our competitiveness, which is affected by many factors, including the value of the dollar."

On the other hand, he says, "a lower cost dollar won't result in greater U.S. exports if world market access is restricted."

Off-Farm Work for Long-Term Survival

Farm families may have once looked at off-farm employment as a transition to full-time farming or as a step toward leaving farming altogether for retirement or other reasons.

But that perception has probably changed for good, say economists Priscilla Salant of USDA's Economic Research Service and William Saupe of the University of Wisconsin Cooperative Extension Service.

Now, they say, such employment is often viewed as part of a long-term farm survival strategy—a "farm management strategy" involving the best uses of family labor on and off the farm.

In fact, at least one person in about half (45 percent) of the nation's farm families have jobs away from the farm, say the two economists. In 1960, only a third of farm families had someone working off the farm.

The economists based their findings on a survey of Wisconsin farmers, but add that "this is consistent with a long-term, national increase in the number of farm families that combine farm and off-farm work."

Salant says the Wisconsin survey disclosed that "someone worked off the farm in 1982 on half the dairy farms and two-thirds of the non-dairy farms. The hours and weeks of off-farm work were substantial and on average accounted for over $4,000 income per year on dairy farms and about $13,000 on the other farms. Health insurance was the most common fringe benefit received from the off-farm job."

She adds that "on average, dairy farms were smaller, but no less efficient, when the operator worked off the farm. Only about one-third of the dairy farmers and 15 percent of the other farmers who were working off-farm planned to become full-time farmers."

Now that off-farm employment appears to be a regular part of many farmers' work, new questions have emerged.

"How does off-farm work fit into the long-term management plans of farm families?" asks Saupe.

He says the answers may be different for each family, but the basic issue is finding the most profitable strategy.

For example, Saupe says, "while it may be profitable to raise dairy steers to slaughter weight on the farm, it may be more profitable to instead use the feed, labor, and building space to raise replacement heifers."

According to Saupe, "the strategy of someone in the farm family taking an off-farm job can be evaluated in the same framework. First, determine what economic gain and other benefits would be realized from the off-farm work. Second, ask whether the off-farm job is the best alternative available for reaching family goals, given the resources that are available."

Saupe advises that economic gains, benefits, and costs can be estimated by thinking through a number of steps.

"For instance, analyze any marketable skills and abilities. These might come from farming experience in buying and selling, operating and repairing machinery, carpentry, and crop scouting, or from homemaking skills of child care, sewing, and farm accounting. Perhaps there are vocational skills as well such as typing, office management, and welding."

The farmer must also consider such things as transportation costs, fringe benefits, and the security of any off-farm employment—weighing these factors against the gains of spending the same hours on the farm.

FARMLINE TRENDS

Top Farm States

		1st	2nd	3rd	4th	5th	6th	7th	8th
Number of farms, June 1985 (U.S. total: 2.3 million)	farms	Texas 184,000	Missouri 115,000	Iowa 111,000	Kentucky 100,000	Tennessee 98,000	Minnesota 88,000	Illinois 90,000	Ohio 89,000
Land in farms, June 1985 (U.S. total: 1.02 billion acres)	million acres	Texas 136.3	Montana 60.9	Kansas 48.0	Nebraska 47.2	New Mexico 45.0	So. Dakota 44.5	No. Dakota 40.9	Arizona 37.5
Average farm size, June 1985 (U.S. average: 445 acres)	acres	Arizona 4,412	Wyoming 3,867	Nevada 3,520	New Mexico 3,261	Montana 2,280	Alaska 2,235	Colorado 1,288	No. Dakota 1,203
Acres planted to principal crops, 1985 (U.S. total: 342 million)	million acres	Iowa 26.0	Illinois 23.7	Texas 22.6	Kansas 22.1	Minnesota 21.5	No. Dakota 21.5	Nebraska 18.9	So. Dakota 16.1
Number of cattle and calves on farms, January 1986 (U.S. total: 105 million)	million head	Texas 13.80	Kansas* 5.80	Nebraska* 5.80	Oklahoma 5.20	California 5.00	Iowa 4.95	Missouri 4.80	Wisconsin 4.28
Number of hogs and pigs on farms, December 1985 (U.S. total: 52.3 million)	million head	Iowa 13.50	Illinois 5.40	Indiana 4.15	Minnesota 4.10	Nebraska 3.90	Missouri 3.05	No. Carolina 2.35	Ohio 1.98
Cash receipts from crop marketings, 1985** (U.S. total: $73.9 billion)	million dollars	California 9,648	Illinois 5,379	Iowa 5,018	Texas 3,977	Minnesota 3,769	Florida 3,364	Nebraska 3,345	Indiana 2,921
Cash receipts from livestock marketings, 1985** (U.S. total: $69.6 billion)	million dollars	Texas 5,438	Iowa 4,591	Nebraska 4,573	California 4,223	Wisconsin 3,982	Kansas 3,557	Minnesota 3,282	Illinois 2,176
Net cash income from farming, 1984 (U.S. total: $39.2 billion)	million dollars	California 3,769	Iowa 2,661	Texas 2,246	Florida 2,078	Nebraska 1,936	Wisconsin 1,760	Minnesota 1,725	Illinois 1,540
Government payments, 1984 (U.S. total: $8.4 billion)	million dollars	Texas 782	Iowa 743	Illinois 543	Nebraska 533	Minnesota 530	No. Dakota 463	California 335	Oklahoma 309
Farm production expenses, 1984 (U.S. total: $139.5 billion)	billion dollars	California 12.11	Texas 9.83	Iowa 9.10	Illinois 7.20	Nebraska 6.65	Minnesota 6.50	Kansas 6.11	Wisconsin 4.90
Average farm debt-to-asset ratio, 1984	percent	Nebraska 32.0	Iowa 30.5	So. Dakota 30.0	Minnesota 29.5	Georgia 28.5	Wisconsin 27.4	Delaware 26.8	Kansas 26.0

*Kansas and Nebraska tied. **Includes net CCC loans.

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